

8. REGULATIONS, ADVISORIES, AND GUIDELINES

MRLs are substance-specific estimates that are intended to serve as screening levels. They are used by ATSDR health assessors and other responders to identify contaminants and potential health effects that may be of concern at hazardous waste sites.

ATSDR derived an intermediate-duration oral MRL of 1.0 mg/kg/day for DEET based on a NOAEL of 100 mg DEET/kg/day for developmental effects in rats (EPA 1989). The MRL was derived by dividing the NOAEL by an uncertainty factor of 100 (10 for animal to human extrapolation and 10 for human variability).

The International Agency for Research on Cancer (IARC) has not classified DEET as to its carcinogenicity (IARC 2013). The World Health Organization (WHO) has not established any air quality or drinking water guidelines for DEET (WHO 2010, 2011).

The Occupational Safety and Health Administration (OSHA) has not established any enforceable standards for DEET (OSHA 2013b) nor has the National Institute for Occupational Safety and Health (NIOSH) or the American Conference of Governmental Industrial Hygienists (ACGIH) recommended a threshold limit value for DEET (ACGIH 2013; NIOSH 2012).

The American Industrial Hygiene Association (AIHA) and the Department of Energy (DOE) have not established any values for responding to potential releases of airborne DEET for use in community emergency planning (AIHA 2013, DOE 2012).

The Department of Health and Human Services (NTP 2016) has not classified DEET as a carcinogen. The EPA's OPP (EPA 2007) classified DEET as a Group D substance, not classifiable as a human carcinogen, based on no evidence of mutagenicity in multiple tests, or of carcinogenicity in long-term oral ingestion studies in adult rats or mice. EPA's OPP (EPA2007) has not derived inhalation or oral toxicity values for DEET.

EPA has classified DEET as an inert pesticide ingredient in pesticide products that are approved for nonfood human and veterinary use only (EPA 2014c).

8. REGULATIONS, ADVISORIES, AND GUIDELINES

The international and national regulations, advisories, and guidelines regarding DEET in air, water, and other media are summarized in Table 8-1.

8. REGULATIONS, ADVISORIES, AND GUIDELINES

Table 8-1. Regulations, Advisories, and Guidelines Applicable to DEET

| Agency | Description | Information | Reference |
|-----------------------------|---|-------------|---|
| <u>INTERNATIONAL</u> | | | |
| Guidelines: | | | |
| IARC | Carcinogenicity classification | No data | IARC 2013 |
| WHO | Air quality guidelines | No data | WHO 2010 |
| | Drinking water quality guidelines | No data | WHO 2011 |
| <u>NATIONAL</u> | | | |
| Regulations and Guidelines: | | | |
| a. Air | | | |
| ACGIH | TLV-TWA | No data | ACGIH 2013 |
| AIHA | ERPGs | No data | AIHA 2013 |
| DOE | PACs | No data | DOE 2012 |
| EPA | AEGLs | No data | EPA 2013a |
| | Second AEGL chemical priority list | No data | EPA 2014a |
| | Hazardous air pollutant | No data | EPA 2014b 42 USC 7412 |
| | NAAQS | No data | EPA 2014e |
| NIOSH | REL | No data | NIOSH 2014 |
| | IDLH | No data | |
| OSHA | PEL (8-hour TWA) for general industry | No data | OSHA 2013b 29 CFR 1910.1000, Table Z-1 |
| | Highly hazardous chemicals | No data | OSHA 2013a 29 CFR 1910.119, Appendix A |
| b. Water | | | |
| EPA | Designated as hazardous substances in accordance with Section 311(b)(2)(A) of the Clean Water Act | No data | EPA 2013b 40 CFR 116.4 |
| | Drinking water contaminant candidate list | No data | EPA 2009a 74 FR 51850 |
| | Drinking water standards and health advisories | No data | EPA 2012a |
| | National primary drinking water standards | No data | EPA 2009b |
| | National recommended water quality criteria | No data | EPA 2014f |
| | Reportable quantities of hazardous substances designated pursuant to Section 311 of the Clean Water Act | No data | EPA 2013d 40 CFR 117.3 |
| c. Food | | | |
| FDA | EAFUS ^a | No data | FDA 2014 |

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Table 8-1. Regulations, Advisories, and Guidelines Applicable to DEET

| Agency | Description | Information | Reference |
|----------------------------------|---|----------------------|--|
| NATIONAL (<i>cont.</i>) | | | |
| d. Other | | | |
| ACGIH | Carcinogenicity classification | No data | ACGIH 2013 |
| EPA | Carcinogenicity classification | Group D ^b | EPA 2007 |
| | RfC | Not available | |
| | RfD | Not available | |
| | Identification and listing of hazardous waste | No data | EPA 2013c 40 CFR 261, Appendix VIII |
| | Inert pesticide ingredients in pesticide products approved for nonfood use only | Yes | EPA 2014c |
| | Master Testing List | No data | EPA 2014d |
| | RCRA waste minimization PBT priority chemical list | No data | EPA 1998a 63 FR 60332 |
| | Standards for owners and operators of hazardous waste TSD facilities; groundwater monitoring list | No data | EPA 2013e 40 CFR 264; Appendix IX |
| | Superfund, emergency planning, and community right-to-know | | |
| | Designated CERCLA hazardous substance and reportable quantity | No data | EPA 2013f, 40 CFR 302.4 |
| | Effective date of toxic chemical release reporting | No data | EPA 2013h, 40 CFR 372.65 |
| | Extremely hazardous substances and its threshold planning quantity | No data | EPA 2013g, 40 CFR 355, Appendix A |
| | TSCA chemical lists and reporting periods | No data | EPA 2013i, 40 CFR 712.30 |
| | TSCA health and safety data reporting | No data | EPA 2013j, 40 CFR 716.120 |
| NTP | Carcinogenicity classification | No data | NTP 2016 |

^aThe EAFUS list of substances contains ingredients added directly to food that FDA has either approved as food additives or listed or affirmed as GRAS.

^bNot classifiable as a human carcinogen.

ACGIH = American Conference of Governmental Industrial Hygienists; AEGL = acute exposure guideline levels; AIHA = American Industrial Hygiene Association; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CFR = Code of Federal Regulations; DOE = Department of Energy; EAFUS = Everything Added to Food in the United States; EPA = Environmental Protection Agency; ERPG = emergency response planning guidelines; FDA = Food and Drug Administration; FR = Federal Register; GRAS = generally recognized as safe; IARC = International Agency for Research on Cancer; IDLH = immediately dangerous to life or health; NAAQS = National Ambient Air Quality Standards; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PAC = protective action criteria; PBT = persistent, bioaccumulative, and toxic; PEL = permissible exposure limit; RCRA = Resource Conservation and Recovery Act; REL = recommended exposure limit; RfC = inhalation reference concentration; RfD = oral reference dose; TLV = threshold limit values; TSCA = Toxic Substances Control Act; TSD = treatment, storage, and disposal; TWA = time-weighted average; USC = United States Code; WHO = World Health Organization